

Vandenberg Amateur Astronomical Society
presents
The Sidereal Times



Orion Nebula NGC 1976 (see page 5)

Meeting News:

At the December meeting we discussed the brochure and the Xmas party for January, installation of club officers for 2017, and had a nice Xmas get together with snacks during the meeting, 11 members in attendance. Welcomed new member Edmund Burke.

**Reminder: VAAS club meeting Jan 13th 7:00PM
At Me Amori, Pizza parlor in Lompoc, VAAS is
paying for the food only, (all else same as before).**



Lunar Calendar:

New Moon Jan 28th

Full Moon Jan 12th

Note:

December 14 & 15, Dave McNally and Vahan installed the new Gemini-2 controller on the telescope mount. Re wired the power system for the controller along with a fuse for safety purposes. Tested the system and all appears to be functioning as expected. Can control the telescope via the observatory computer or a laptop. Will need to do A complete star alignment first chance we get clear sky and good weather.

Presidents Message

Off we go into a new year! 2017 promises to be a memorable year for astronomers most notably for the Solar Eclipse in August. Locally we should see a near total darkening of the sun, while up in Oregon totality will be achieved.

I am honored to be serving as President of VAAS during the coming year. While my actual abilities as an amateur astronomer are notably limited, I do enjoy learning from all you experienced members and sharing in your camaraderie. Growing up in a small town in Mississippi my nights were filled with a blanket of stars with the Milky Way densely blue against the blackness. When at age 11 my parents gave me a "Gilbert 40 POWER! Telescope" for Christmas I was stunned by the yawning craters on the moon that seemed so close I could fall into them. I was disappointed to find the wide smooth Maria to be a dull gray rather than the lovely pale blue seen by my naked eye. My introduction to the realities of scientific discovery!

As to the future, remembering those amazing dark sky nights of my childhood, I hope that we in VAAS can help lead Lompoc toward darker nights in town. There are many simple things that home owners, businesses and the City itself can do to reduce the "noise" of light pollution. We will benefit our community by encouraging lighting awareness. VAAS has done a great job over the years with our public outreach. We can expand on these efforts by increasing our membership. We can also research available programs for our monthly meetings that will draw interested community members and look at ways to make these programs more widely known to the public.

On the immediate horizon: PIZZA!!! Yes, Friday the 13th will be a lucky night for our January meeting as we gather at Mi Amore Pizza at 7:00PM. Vice President Jana has made all the arrangements and we are in for a fest treat! There will even be hot chicken wings for those on time at 7:00...supply limited, so don't be tardy!

Also this month: Zaca Mesa Winery has invited us to help with their Jan 21st "Stars and Syrah Party." They are expecting around 45 guests of all ages. The more scopes we have at the party, the better. Jana has also offered to give "Star Talk" presentations. Please let us know if you are able to attend with your scope[s] or will be able to help Jana. We will need to arrive well **before** their start time of 5:30 (ends at 8:30). We will set up in front of their barn since there is very little light pollution there. They are located on Foxen Canyon Road outside Los Olivos.

A special thank you to immediate past president, Jana Hunking, for her wonderful work across the past 2 years. Jana has been extremely helpful explaining the duties of President. I am VERY glad that she will be backing me up as Vice President! Here's to Starry Nights!

Tom

Events

Jan 3 & 4th Quadrantids meteor shower is an above average shower with up to 40 meteors per hour at its peak. The shower is produced by dust grains left behind by a comet known as 2003EH1. It peaks on the night of the 3rd and morning of the 4th. Meteors radiate from the constellation of Bootes but can appear anywhere in the sky.

Jan 7th *Star party at the observatory.*



Jan 12th Venus at greatest elongation of 47.1 degrees from the Sun. It is best viewed then because it is at its highest point above the horizon in the evening sky. Look toward the Western sky just after sunset.

Jan 19th Mercury is at its greatest elongation from the Sun. It will be at its highest point in the morning sky. Look low in the Eastern sky just before sunrise.

Jan 21st *Star Party at the observatory.*



Jan 28th *Star party at the observatory*



Star party's and Events

Dec 2nd Craig Fair from VAAS attended the Los Flores event. Three other astronomers attended from SLO.

Weather was cold and the breeze lessened to 5-8 mph. I showed, M81-M82, Andromeda, Orion, Dumbbell, Ring, Double Cluster and M15 Globular cluster. Also the Moon, Mars, Venus and many more. All in all everyone had a great time. Ran from 6:00 Pm to 9:00 Pm about 20 people showed.



Dec 10th Star party at the observatory. Cancelled due to weather.



Nuts!

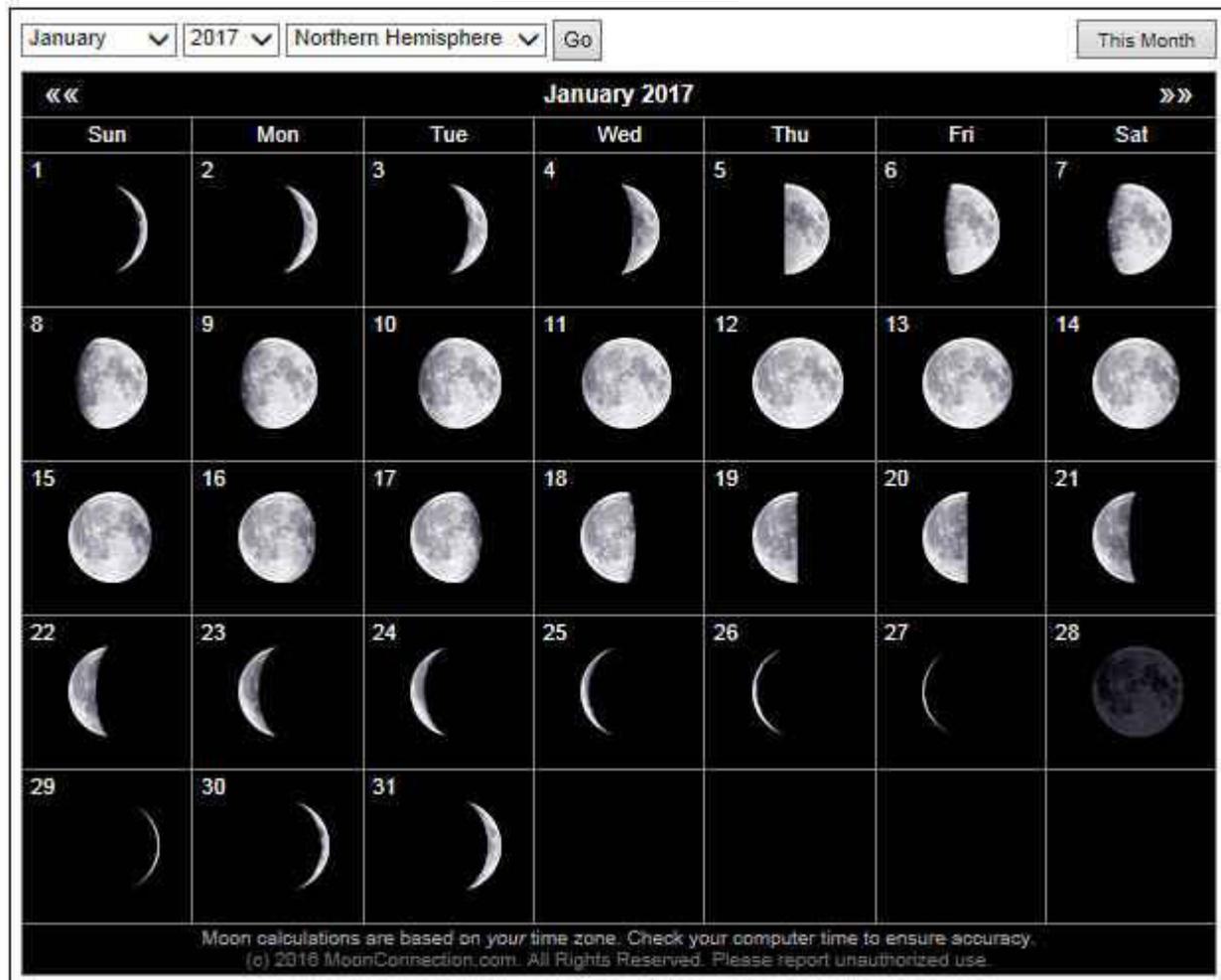
Dec 17th Star party at the observatory. Dave and Vahan on site. Began star calcs on the 14 inch newly installed Gemini-2 controller. Completed Star calcs everything appears to be working properly. Tried designating to several Messier objects but none appeared in the field of view of the eyepiece, all were slightly out of the FOV. Decided to re do the star cal cause we forgot a step, but it was so cold (near freezing) that we decided to call it quits for this session. Was a good but very cold night under the stars.



Dec 9th Meeting Business and Xmas tasty treats



Jan 2017 Moon



Full 12th, New 28th, 1st Quarter 5th, Last Quarter 20th

Moon Facts

The Moon is moving away from Earth by 1.48 inches per year.

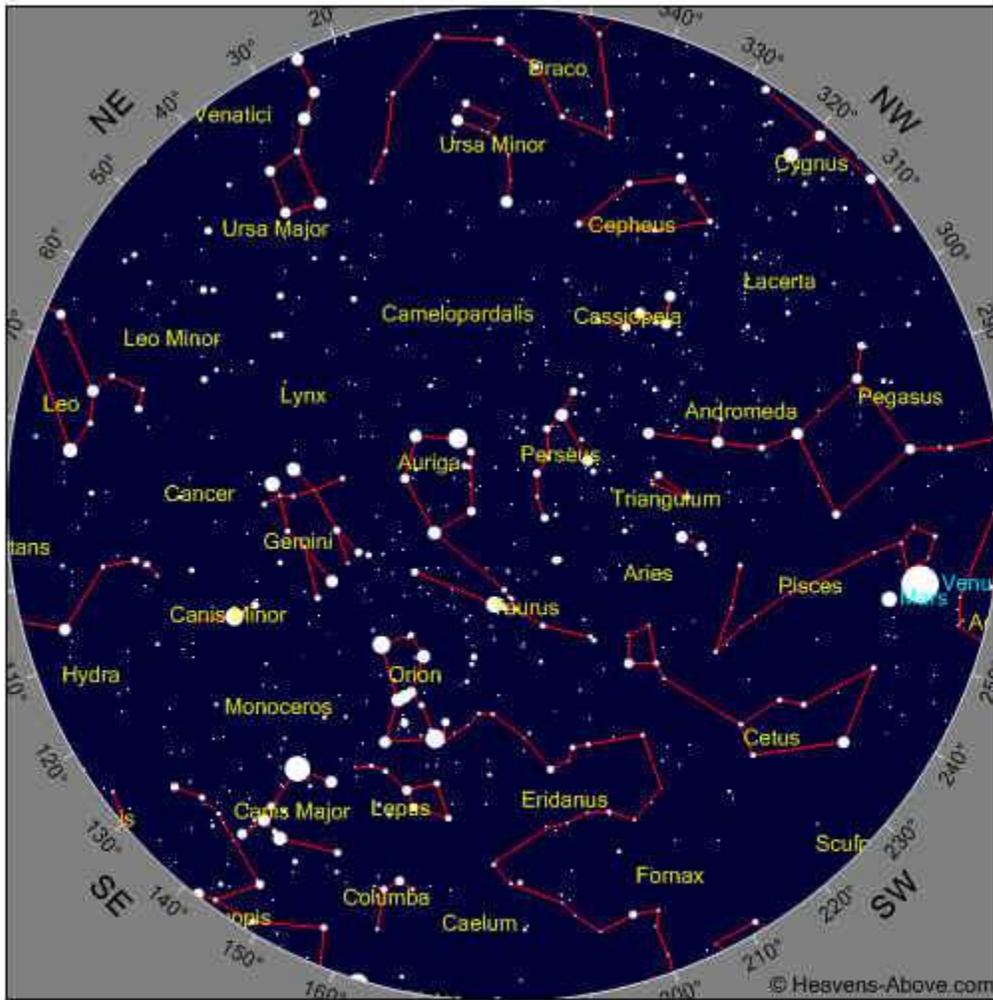
The Moon is not round, it is egg shaped.

Your weight on the Moon is 16.5% of your weight on Earth.

The American flags placed on the Moon are now white due to the radiation from the Sun.

The moon rotates at 10 miles per hour compared to the earth's rotation of 1000 miles per hour.

January 2017 Sky
Some Objects of interest M42, M31



Time

Year	2017	Month	1	Day	27	Hour	20	Minute	0
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Photo Courtesy Dave McNally



Messier 42, NGC 1976 is a diffuse nebula in the sword of the constellation of Orion. It is located at a distance of 1344 light years and is the closest region of massive star formation to Earth. At that distance its angular diameter of 66X60 arcminutes corresponds to a linear diameter of 20 light years. It has a mass of about 2000 times that of the Sun. The nebula has revealed much about the process of how stars and planetary systems are formed from collapsing gas and dust. Astronomers have directly observed protoplanetary disks, brown dwarfs, intense and turbulated motions of the gas and proto-ionizing effects of nearby massive stars in the nebula. The nebula contains a very young open cluster known as the trapezium due to the asterism of the primary four stars. The stars of the Trapezium are in their very early years. The brightest of the trapezium stars is Theta 1 Orionis C. It is the nearest young O type star known and is also the most massive of them at its apparent magnitude of 5.13 and spectral type O6p. This star is the most contributing to excite the Orion nebula to shine. Its temperature is estimated to be 33,000 degrees Kelvin. Two million years ago the cluster may have been home of the runaway stars AE Aurigae, 53 Ariets and Mu Columbar which are moving away from the nebula at velocities of 100 Km/sec. Image capture was with a Sigma 170-500 f/5.6 telephoto lens, a Canon 60D modified, and a Celestron CGEM hypertuned mount. Image processing was done with Deep Sky Stacker software 3.3.4.



For what its Worth

Exit pupils: Choose eyepieces to match the eyepiece exit pupil to the type of observing you want to do. The eyepiece exit pupil is the diameter of the beam of light coming out of the eyepiece. To find the Exit pupil size divide the eyepiece focal length by the telescope focal ratio. The higher the power, the smaller the exit pupil.

The brightness of extended objects (galaxies and nebulas) is proportional to the square of the exit pupil. Therefore, a low power 4mm exit pupil ($4^2 = 16$) is four times as bright on galaxies and nebulas as a medium power 2mm exit pupil ($2^2 = 4$). So twice the power results in one-fourth the brightness on the faint fuzzies outside our solar system.

The brightness of a point of light (a star) is a function of the aperture of your scope – not the exit pupil. The bigger the aperture, the fainter the star you can see. Stars do not get dimmer as a scope's power increases and the exit pupil gets smaller. Extended objects do, however, and the sky becomes progressively darker as the power goes up. The result is that faint stars are usually more visible at higher powers, as the contrast between the unchanging star brightness and the progressively darker sky background increases.

From dark sky sites, a 5mm to 7mm exit pupil is best for observing Milky Way star clouds, open clusters, large nebulas such as the Veil, etc. From mildly light-polluted suburban sites, a 3mm to 4mm exit pupil improves the contrast of these large-scale objects by darkening the light-polluted skies somewhat without overly dimming the objects themselves.

A 2mm exit pupil typically most closely matches the area of highest resolution in your eye and gives you good detail for planetary, lunar, and globular cluster observing. The sharpness of those details is likewise improved by a 2mm exit pupil, as a smaller exit pupil minimizes astigmatism at the edges of your dark-adapted eye. Also, the visibility of small galaxies and planetary nebulas is often enhanced by the darkening of the sky background with a 2mm exit pupil.

A 1mm exit pupil gives you maximum planetary detail and is excellent for splitting binary stars. A 0.5mm exit pupil is useful for splitting close double stars, but only during very good seeing.

If you have a 5-mm eye pupil, you cannot use an eyepiece longer than 20 mm focal length on *any* f/4 telescope, or 30 mm on any f/6 scope, if you want full use of the aperture. This is true regardless of the telescope's size or anything else. The rule here is $e = fp$, where e is the eyepiece focal length, p is pupil size, and f is the telescope's f/number (focal ratio).

When all is said and done, you'll probably end up most pleased with a telescope's views when its exit pupil is from 2 to 5 mm across. By no coincidence, this is just about the everyday working size of the pupils that nature gave you.

Club Officers



**President
Tom Gerald**



**Vice President
Jana Hunking**



**Treasurer
Vince Tobin**



**News Letter Editor
Vahan Yeterian**

*“Astronomy compels the soul to look upward,
and leads us from this world to another”.*
(Plato)



Club Meeting

Reminder Club meeting Jan 13th at 7:00Pm
Mi Amori Pizza parlor Lompoc.

Star Parties (as always weather permitting)

Other Astronomy Club Meetings

Central Coast Astronomical Society

Link to web site...

<http://www.centralcoastastronomy.org/>

Santa Barbara Astronomical Unit

Link to web site...

[http:// www.sbau.org/#AU_EVENTS_Calendar](http://www.sbau.org/#AU_EVENTS_Calendar)

Night Time Bright Objects (no scope required)

Link to “Heavens Above” web site

[http:// www.heavens-above.com/](http://www.heavens-above.com/)

(Iridium Satellite)

(ISS Visible Pass)

Be sure to set the nearest location from their
pull-down menu.

The web site link below will take you to some
Great Milky Way interactive images and how
It was developed. (Type it in the search box.)

<http://skysurvey.org/>

VAAS.

Dave McNally is the VAAS Web Site Serf/Minion

Dave

